

# PROCEEDINGS OF THE ROYAL ENTOMOLOGICAL SOCIETY OF LONDON

## SERIES C. JOURNAL OF MEETINGS

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### ANNUAL MEETING

WEDNESDAY, 21ST JANUARY, 1953, at 5.30 p.m.

#### AGENDA

1. Announcement of election of Officers and Council for 1953.
2. Admission of Fellows.
3. Council's Report.
4. Treasurer's Report and Balance Sheet.
5. **The President's Address.**
6. Vote of thanks to the Officers.

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At the conclusion of the meeting :

7. Presentation to Mr. N. D. RILEY on behalf of Fellows of the Society.

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TEA will be served in the Library before the meeting.

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#### Serial Publications in the Library of the Royal Entomological Society of London

A list of the serial publications in the Society's Library, with the titles abbreviated in accordance with the *World List of Scientific Periodicals*, has now been prepared. Copies may be obtained in the Society's office, price (to Fellows) 3s. 9d.

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#### NOTICE

##### *Problems of Distribution of Plants and Animals in Africa.*

The attention of Fellows is drawn to a meeting of the Linnaean Society which will be held in the rooms of the Society at Burlington House on 29th January, 1953. Six papers on various aspects of this subject will be read and will be followed by discussions. The meeting will be held in three sessions, 10.45 a.m. to 1 p.m., 2.15 p.m. to 4.30 p.m., and 5 p.m. to 6.30 p.m. The following have agreed to speak :

- Mr. E. Milne-Redhead (Flowering Plants).
- Mr. R. E. Moreau (Birds).
- Dr. A. T. Hopwood (Recent and Fossil Mammals).
- Mr. P. F. Mattingly (Mosquitoes).
- Prof. P. C. C. Garnham (Blood Protozoa).
- Dr. E. B. Worthington (Fresh-water Organisms).

Any Fellow interested in the distribution of the African Flora and Fauna is invited to attend.

PROCEEDINGS OF THE ORDINARY MEETING HELD ON 3RD DECEMBER, 1952.

Mr. N. D. RILEY, C.B.E., President, in the Chair.

Present 83 Fellows and 30 Visitors.

The minutes of the Ordinary Meeting and of the Special Meeting held on 5th November, 1952, were confirmed and signed by the President.

The President extended a welcome to Fellows of the Royal Meteorological Society present at the meeting.

The names of the following candidates for election were read for the first time : Mr. Jack Walter Trench Armstrong ; Mr. Raymond Bailey ; Dr. John James Reid McLintock ; Mr. Peter Wallace Miles ; Mr. Neville Ryder Phillips ; Mr. Rajendra Kumar De ; Mr. David George Sandy.

For the second time (taken as read) : Mr. S. M. Taqi Ahsan ; Mr. Ian Michael Crichton, B.Sc. ; Mr. Michael Gordon Emsley ; Mr. Philip Frank Entwistle ; Mr. Peter Dickinson Gabbutt, B.Sc. ; Mr. William Weir Macdonald, B.Sc. ; Mr. Bashambar Lal Marwaha, B.Sc. ; Dr. Ram Nath Mathur, M.Sc., Ph.D. ; Miss Joyce Maynard ; Mr. Hugh Edward Haldane Paterson, B.Sc. ; Mr. Clare Dudley Putman, B.A. ; Mr. David Robert Ragge ; Mr. Jeremy Roffey ; Mr. Ronald Harvey Simons, B.Sc., A.R.C.S. ; Mr. Braj Kishore Sinha, B.Sc., M.Agr.Sc. ; Mr. Walter Reginald Smith, B.A. ; Mr. A. Terence Thompson, B.Sc. ; Dr. Cecil Raymond Twinn, M.Sc., Ph.D. ; Miss Dorothea B. Willrich ; Mr. David John Greathead.

The Secretary read the names of the following newly elected Fellows of the Society : Mr. Reginald Lousada Barrow, The Hermitage, Malvern Link, Worcestershire ; Professor Lewis Berner, Dept. of Biology, University of Florida, Gainesville, Florida, U.S.A. ; Mr. Kenneth Ridgway Crawshaw, Heron Cottage, White Notley, Witham, Essex ; Mr. Geoffrey Crisp, 71, Newchurch Road, Rawtenstall, Rossendale, Lancs. ; Mr. Roy Arthur French, B.Sc., Rothamsted Experimental Station, Harpenden, Herts. ; Mr. Peter Graham, Box 41, Blantyre, Nyasaland ; Mr. Percy Rodriguez, Warden's Office, Princes Town, Trinidad ; Mr. Parkash Lal Renjhen, M.Sc., Directorate of Plant Protection Quarantine and Storage, Shahjehan Road Hutments, New Delhi, India ; Dr. Herbert H. Ross, Illinois Natural History Survey, Urbana, Illinois, U.S.A. ; Mr. David Spencer Smith, 87, Willingdon Road, Eastbourne, Sussex ; Mr. Hari Mohan Lal Srivastava, M.Sc., Entomologist, Malariology, U.P., Lucknow, India ; Mr. Norman Edward Stacey, B.Sc., 81, Vernon Road, Seven Kings, Ilford, Essex ; Mr. Cecil Charles Tonsley, 1, Gough Square, Fleet Street, London, E.C.4 ; Mr. Henry Robert Wallace, B.Sc., 37, Clarendon Street, Cambridge.

Thanks were voted to donors of gifts to the Library since the last meeting.

The Secretary read for the second time the nominations for Officers and Council for 1953.

Dr. C. A. Clarke, Mr. P. S. B. Digby, Mr. J. H. Murgatroyd, Mr. M. L. Purohit and Mr. Claude Sisley signed the Obligation Book and were admitted Fellows of the Society.

The following papers, accepted for publication in the *Transactions*, were read in title :

"The morphology and biology of *Ernobius mollis* L. (Coleoptera : Anobiidae)," by Miss P. Gardiner.

"A study of the life cycle of *Adleria kollari* Htg.," by E. M. Marsden-Jones.



- "The classification of the Dryinidae (Hymenoptera) with descriptions of new species," by O. W. Richards.
- "On the external morphology of the neck and thorax in *Forficula auricularia* L. (Dermaptera)," by H. Henson.
- "The development of imaginal buds in the heads of *Pieris brassicae* L.," by Y. E. E. Eassa.
- "On the nutrition of *Carpophilus hemipterus* L. (Coleoptera : Nitidulidae)," by G. O. Stride.

Dr. C. A. Clarke showed living and set hybrid butterflies resulting from the "cross" *Papilio asterias* ♀ (North American Black Swallowtail) × *Papilio machaon* ♂ (Malta stock). The "cross" had been effected by hand-mating in October, 1952. The early stages were identical with *machaon*, but the larvae were slightly different from *asterias* in the last instar. The perfect insects, both male and female, were identical with *asterias* and apparently had no *machaon* characteristics.\*

The hybrids had been hand-mated and also "back crossed" to a female *machaon*, but no eggs were laid and it is thought that the hybrids are completely sterile.

Dr. Clarke also showed a map of North America indicating roughly the range of *P. asterias* and *P. machaon* and also of the intermediate forms.

Mr. C. N. Hawkins suggested that forcing the hybrids might have affected fertility, with which Dr. Clarke agreed, adding that he hoped to repeat the experiments in the spring without forcing.

In thanking Dr. Clarke for his interesting communication the President said he hoped that these experiments would throw light on the systematic problems presented by these species.

Professor P. A. Buxton exhibited fungus gnats (Mycetophilidae, subfam. Mycetophilini) bred from slime-fungi (Myxomycetes or Mycetozoa). There are no previous breeding records of the fungus gnats *Platurocypta* (referred to as *Epicrypta* by Edwards in his monograph (*Trans. ent. Soc. Lond.* 1925 : 647)). *P. punctum* Stannius has been bred in numbers from the Myxomycete, *Lycogala epidendrum*, at Gerrards Cross, Bucks. In the British Museum (Natural History) there is material of *P. testata* Edwards labelled "large numbers reared by H. Britten from a Mycetozoan (*Reticularia lycoperdon* Bullyard), Rostherne, Cheshire, 1.vi.31. Larvae not of the shell-bearing type." No records of Diptera bred from Myxomycetes have been noticed.

Dr. J. L. Cloudsley-Thompson exhibited specimens of *Cafius fucicola* Curtis (Col. : Staphylinidae) collected at Port Erin, Isle of Man, in April. These insects were very numerous in the heaps of dead seaweed washed up by the tide. Despite their moist habitat, they could not long survive immersion in sea-water. At night they were to be found climbing rocks and cliffs in great numbers, as illustrated by a flash-light photograph shown on the epidiascope, in which sandhoppers (Talitridae) were also visible. Unlike some nocturnal insects which nevertheless are attracted to lights at night, these beetles remained extremely light-shy at all times, and quickly fled when illuminated by an electric torch. No previous reference to the habit of climbing rocks at night had been discovered. The species is apparently local in distribution, and always found with sea-weed.

\* Since presenting the communication, however, careful comparison of the hybrids with type males by Mr. Knudsen of Oglethorpe University, Atlanta, has shown that there are slight differences between the butterflies and that there is a definite *machaon* influence in the hybrids.



Mr. Arthur Welty exhibited a drawing of the spider he had commented on at the last meeting (*ante* p. 48) which had markings resembling the face of the higher mammals, and added that he believed the species to be *Araneus quadrantus*.

Miss L. E. Cheesman made a communication on the marine habit of *Ragovelia nova-caledonica* Lundbl. She said the genus had a wide distribution but hitherto no species had been taken on salt water. In New Caledonia she had taken it in backwaters of streams, also near her mountain camp in small pools of surface water in the forest. Lifu atoll possessed no running water, but the heavy rainfall supplied large natural subterranean reservoirs in the coral. She had found no vegetable or animal life in those examined.

*Ragovelia nova-caledonica* existed on the reef in Doz Bay in small companies together with *Halobates princeps* B. White, which appeared to prey on the *Ragovelia* nymphs. On one occasion she found newly emerged *Ragovelia* about two yards above the tide line on the beach, making their way to the sea.

*Microvelia oceanica* Distant was running about on a green alga on the partly shaded surface of an open concrete rainwater tank.

Mr. L. S. Whicher exhibited a single male example of the very rare Carabid beetle *Acupalpus elegans* Dejean, taken by him in the Isle of Grain on 1st June, 1952. This species was introduced to the British List by Dawson in 1854 from specimens taken in a very restricted locality in the Isle of Sheppey. The locality was built over in 1860 and the last recorded capture appears to be one specimen taken in 1875 by the late Commander Walker, who, in 1932, expressed the opinion that the beetle had become extinct in Britain. This species is of interest because it forms an almost perfect link between the genera *Stenolophus* and *Acupalpus*.

Dr. R. C. Rainey gave a paper on desert locust swarm movements and weather, an abstract of which appeared on pages 45-46.

The discussion which followed was opened by Dr. B. P. Uvarov who said that the theory now put forward, which was based on combined evidence from meteorological and entomological investigations over 20 years, made an important advance in the knowledge of locust movements. He believed this co-operation could be developed to provide a basis for improving the forecasting of large-scale movements and, as a great deal of data regarding migration was available for other groups of insects, the same approach might throw light on large-scale movements of insects generally. Dr. Uvarov emphasised the need for reliable meteorological information in locust research and control and for more meteorological stations in countries affected or likely to be affected by locusts. This need was being brought to the notice of the World Meteorological Organisation and it was hoped that this evidence of the value of meteorological work might help to expand meteorological services.

Dr. R. S. Scorer (Royal Meteorological Society) complimented Dr. Rainey on his paper. He said that in particular it showed that a form of life whose perpetuation depended on the weather depended very much on the day-to-day development of the weather situation. It was a common experience for meteorologists to be introduced to a problem through the climatological averages, but to find that the fundamental processes depended absolutely on the short period changes of the weather. The locust was a pawn in the hands of capricious wind changes and he was inclined to believe that if any insect is found to be dependent on the weather processes for its survival, the manner of that dependence will be understood from a study, not of long-term averages, but of particular occasions.



Meteorologists would be well pleased if more observing stations could be set up in the locust areas for a better understanding of the development of the weather must result.

Dr. J. S. Kennedy also congratulated Dr. Rainey and emphasised the importance of his achievement. The desert locust was the sole case out of all flying migrants, birds included, where we could now begin to see what principles governed the whole seasonal and geographical pattern of movements. In accepting Dr. Rainey's broad theory, and admitting that the great, biologically productive movements were with the wind, he would not ignore lesser movements which could be against the wind. He quoted the spring movement of desert locusts northward against the wind in Persia. This led the locusts that persisted in it to places where they could not breed, and such abortive movements with no return were interesting for two reasons. Their regular occurrence, along with other movements which did lead to further breeding and eventual return, showed that we need not expect to find a return from every regular migratory movement. The "evolutionary dilemma" that had given rise to this expectation, rested on the assumption that migrations were entirely self-directed. But the locusts' behaviour did not directly determine the direction of their movements. Among individuals with identical behavioural make-ups, some would effect useful movements but others futile ones, according to the weather they met. So long as enough of the movements were useful, the behaviour itself was useful and the stock possessed of it need not die out. The second reason for attention to abortive movements was that they were a mortality factor which might contribute significantly to the little-understood process of decline of a locust plague.

Dr. C. B. Williams said that over twenty-four years ago he tried to prove that butterflies and moths migrated as efficiently as locusts, but Dr. Rainey's paper and other recent work rather indicated that Lepidoptera might be better than locusts. Locusts had been observed at great heights but there were only a dozen or so records of Lepidoptera migrating at heights of more than 100 feet.

There were many records of butterflies moving against the wind on several days in succession and also of two species of butterfly migrating in opposite directions simultaneously: in one of the latter cases a transverse stream of locusts was observed at the same time. While he agreed that Dr. Rainey's theory marked an important advance in our knowledge of the movements of locusts, he did not feel it could be applied to the migration of Lepidoptera.

Dr. Rainey said, in reply to Dr. Kennedy, that he fully accepted the possibility of swarm displacements of secondary importance taking place against the wind, but that such movements must be expected to be of limited extent, of the order of a few miles a day, and to be restricted to periods of light winds.

In reply to Dr. Williams, Dr. Rainey pointed out that he had in fact refrained from using the word "migration" in connection with locusts. He had himself seen, in Eritrea and Kenya, indications in butterflies of a type of behaviour—maintenance of an approximately constant track despite topographical obstacles and wind fluctuations—which has not so far been recorded in locusts. He would accordingly make no claim that the general conclusions of his locust work would necessarily be applicable to Lepidoptera, but he felt that the approach used—the examination of all available current weather data relating to specific well-documented flight records—might well prove illuminating in this connection also. He further emphasised the limitations of observations of individual flying insects seen from a single point at ground level as evidence of the displacement necessarily made good by the population as a whole.

In concluding the meeting the President moved a vote of thanks to Dr. Rainey, which was carried unanimously.

E. B. BRITTON, *Honorary Secretary.*

The next meeting will be held on 4th February, at 5.30 p.m.

### Alteration of Bye-Laws.

A printed slip setting out the alterations to the Bye-Laws made at the Special Meeting on 5th November, 1952, is enclosed for insertion in the copy of the printed Bye-Laws already in the possession of Fellows.

### ADDITIONS TO THE LIBRARY.

#### *Presented.*

- Ceballos, G., and Zarco, E. *Ensayo de lucha biológica contra una plaga de Diprion pini (L.) en masas de Pinus sylvestris, de la Sierra de Albarracín.* 8vo. Madrid. 1952. [Instituto Español de Entomología.]
- Kassianoff, Ludmilla. *Étude morphologique et biologique de la famille des Cimicidés.* 4to. Paris. 1936. [Mr. A. W. McKenny-Hughes.]
- Myers, J. G. *A preliminary report . . . on biological control of West Indian insect pests.* 4to. London. 1931. [Mr. A. W. McKenny-Hughes.]
- The Queensland agricultural and pastoral handbook. Vol. 3. Insect pests and diseases of plants.* 2nd edn. 8vo. Brisbane. 1951. [Department of Agriculture and Stock, Brisbane.]
- Scharff, J. W. *Anti-malarial drainage from the point of view of the health officer.* 4to. Penang. 1935. [Mr. A. W. McKenny-Hughes.]
- Thompson, W. R. *The biological control of insect and plant pests.* 4to. London. 1930. [Mr. A. W. McKenny-Hughes.]

#### *Purchased.*

- Villalobos, C. and J. *Colour atlas.* Oblong 8vo. Buenos Aires. 1947.

In addition, separates have been presented by Capt. D. B. Baker; Dr. J. L. Cloudsley-Thompson; Mr. D. K. McE. Kevan; Pest Control, Ltd.; Mr. A. W. McKenny-Hughes; Professor J. Lane; Dr. N. E. Hickin; Mr. E. B. Basden; Mr. H. E. Box; East Malling Research Station; Lieut.-Colonel F. C. Fraser; Dr. L. Broadbent; Infestation Control Division, Ministry of Agriculture and Fisheries; Dr. T. Karabag; Commonwealth Institute of Entomology; Mr. R. L. Edwards; Mr. W. B. Broughton; American Entomological Society; Chief Entomologist, Tsetse Research Division, Shinyanga; Dr. Max Sellnick; Dr. G. D. Morison; Stations fédérales d'essais agricoles, Lausanne; and Dr. Saadet Ergene.